

PATENT SPECIFICATION

DRAWINGS ATTACHED

883,205



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COMPLETE SPECIFICATION

Improvement in or Modification of a Spraying Apparatus

We, DR. A. LANDOLT A.-G., a Swiss Body Corporate, of Zofingen, Aargau, Switzerland, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The parent specification No. 750,940 relates to a spraying pistol for atomizing, mixing and applying at least two spraying substances, for example a varnish and a hardening agent, of the type comprising a container for spraying matter, a feeding duct for compressed air, an adjusting device for controlling the feed of compressed air, a nozzle for atomizing the spraying matter contained in said container and entrained by the current of compressed air, and at least one additional container for spraying matter exchangeably connected with the pistol, said additional container or containers being arranged below the nozzle of the pistol and each being provided with a nozzle, the outlet of which is located at the outside of the pistol but in immediate vicinity thereof, such nozzle of an additional container projecting from below into the zone of action of the stream of compressed air passing through the pistol nozzle, said stream being used for causing the spraying matter contained in each additional container to leave the latter through its nozzle so as to be atomized and intimately mixed with the spraying matter contained in the jet leaving the pistol nozzle.

According to a preferred embodiment of the present specification each additional container is adjustably arranged on the pistol by means of flanges of a sleeve engaged by a bolt, which sleeve is rotatable and longitudinally movable and adapted to be maintained in any position by a setting screw and said bolt being screwed to the pistol body by means of an annular flange in such a way below the pistol nozzle that the nozzle of a tube arranged in the additional container lies at the level of the pistol nozzle.

In the embodiment represented in the parent specification the nozzle of each additional con-

tainer is provided at the upper end of an elongated portion inclined with respect to the longitudinal axis of the additional container of an insert placed in the open upper end of the additional container. In order to place the nozzle of the additional container into the correct position with respect to the pistol nozzle, the supporting means is provided, in these embodiments, with a holder for the additional container which is adjustable in height and angularly movable and in addition thereto the insert comprising the additional nozzle may be turned with respect to the additional container. As the insert as well as the additional container in the said embodiments is made of glass it is necessary for turning the insert in the additional container to loosen this insert to turn it and to press it against its seat hereafter. This pivoting of the whole additional container with its support and the turning of the insert relatively to the additional container is not only wearisome but in addition thereto renders practically impossible a quick and reliable fine adjustment of the additional nozzle.

According to the present improvement and/or modification of a spraying apparatus of the above mentioned type, the additional nozzle is arranged on a nozzle body, said nozzle body being mounted on a nozzle carrier and capable of adjustment in the direction of the nozzle axis, said nozzle carrier being mounted on a guiding bolt and capable of adjustment in a direction perpendicular to the nozzle axis, said guiding bolt being mounted on a carrying bolt by means of a clamping sleeve so that the said guiding bolt is capable of adjustment in a direction parallel to the nozzle axis and also capable of rotation about the carrying bolt, said carrying bolt being attached at one end to a portion of the pistol and secured at the other end in a sleeve by means of setting screw, said sleeve having fixed to it a cup which supports the additional container, said additional nozzle and said additional container being interconnected by a flexible pipe.

[Price not stated]

Owing to this particular arrangement the additional nozzle, independently from the additional container, may be brought into any desired position with respect to the pistol nozzle.

A preferred embodiment of a spraying pistol according to the present invention is herein-after described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is an elevational view of the spray pistol,

Figure 2 is a top view showing the additional container and the parts associated therewith and

Figure 3 is a vertical axial section through the additional container.

The pistol shown in Figure 1 comprises in well known manner an upper portion 1 and a handle 2, extending downwardly from it and serving for the infeed of compressed air to the pistol nozzle 4 for which purpose it is provided at its lower end with a connection piece 3 for a not represented compressed air pipe. A container 5 for a first spraying material is connected with the upper portion 1. For the rest of the represented spraying pistol is constructed with respect to the compressed air feed to the pistol mouth piece 6 in the same manner as the pistol illustrated in Figure 1 of the parent specification.

Onto the portion carrying the mouth piece 6 of the pistol portion 1 there is screwed a two-part strap 8. A carrying bolt 9 projecting downwardly and perpendicularly with respect to the axis of the pistol nozzle 4 is secured to the lower portion of the strap 8. An open clamping sleeve 11 provided with a setting screw 10 is arranged on the bolt 9 and serves as a support for a nozzle carrier 12. For this purpose a guiding bolt 13 provided with a longitudinal groove 14 and projecting radially away from the clamping sleeve 11 is secured to the latter. On this guiding bolt 13 the nozzle carrier 12 is adjustable by means of a setting screw 15 co-operating with the groove 14. The setting screw 15 engaging the groove 14 in addition prevents the nozzle carrier 12 from rotating with respect to the guiding bolt 13. For axial displacement of the nozzle carrier 12 on the bolt 13 a setting screw 16 is inserted into an axial threaded bore of the bolt the head or operating knob of this adjusting screw 16 cooperating with a driver arm 12a of the nozzle carrier 12. The threaded shaft of a nozzle body 17 is screwed into a sleeve portion 12b of the nozzle carrier 12 and may be adjusted in any position by means of a pair of nuts 18 arranged at both sides of this sleeve portion. As illustrated in the drawing the axis of the nozzle body 17 extends perpendicularly with respect to the axis of the guiding bolt 13 and parallel with respect to the axis of carrier bolt 9. At the upper end portion of the nozzle body 17 provided with a through-going axial bore there is se-

cured a co-axial nozzle 19. This nozzle 19 may be exchangeable or it may be rigidly connected with the nozzle body for example by brazing.

A sleeve 20 adapted to be adjusted in any position with respect to the carrier bolt 9 by means of a setting screw 21 is arranged on the carrier bolt 9 below the clamping sleeve 11 so as to be pivotally and axially displaceable (Figure 1). The lower end portion of sleeve 20 carries a cup 22 receiving the additional container 23 for the second spraying material. Reference numeral 24a designates a connection piece through which air may penetrate into the additional container and 24 denotes the filler opening for the additional container. An insert 25 is slipped from above into the additional container 23, the neck of the bottle 26 serving as a seat for this insert. The latter is made of glass as is also the additional container 23. The insert comprises a neck 28 closed by a plug 27 and provided with a connection piece 29. The latter is connected, by means of a flexible pipe 30, with the lower open end of the nozzle body 17 as is visible from Figure 1. The neck 28 of insert 25 comprises an inner extension tube 31 formed with double walls in its upper portion. The inner wall of tube 31 forming an open-top rising pipe 32 is extended beyond the connection piece 29 into the neck 28. At a narrowed portion 33 of this tube 32 there is formed a seat for an indicating rod 34 adapted to co-operate with marks a provided on the neck 28. Below the starting point of the rising tube 32 at tube 31 the latter is widened and hereafter again narrowed to form a valve seat 35. A valve body 36 arranged loosely in the widened portion of the tube co-operates with the valve seat 35 so as to form a check valve. A hollow body 37 is inserted into the lower outwardly tapering end portion of tube 31. This body has an upper portion 38 axially aligned with the check valve 35, 36 and a lower portion 39 which projects into the container 23. The port or passage provided in the portion 39 is of smaller cross-section than is the passage in portion 38.

As the trigger of the pistol is actuated the spraying material contained in the container 5 is entrained by the compressed air stream passing through the body portion 1 and leaves the nozzle 4 in atomized condition together with the jet of compressed air. Owing to the jet pump action of this jet the additional spraying material contained in the additional container 23 is sucked out through the nozzle 19 which is arranged in the zone of action of the jet of compressed air and spraying material leaving the pistol nozzle 4 but outwardly of the latter, i.e. in front thereof. Thereby the second spraying material penetrates through the hollow body 37 into the tube 31 of the insert 25, lifts the valve body 36 from its seat 35 and rises through the rising

5 tube 32 while lifting the rod 34 into the inner
chamber of neck 28 from which it arrives
through pipe 30 and the nozzle body 17 to the
nozzle 19. The greater the sucking action is
10 the higher the rod 34 rises in the rising tube
32. Thereby the arrangement is chosen such
that upon correct adjustment of the air stream
at the pistol portion 1 there is produced in
the rising tube 32 a sucking action which lifts
15 the rod 34 up to the marking *a* on the neck
28 of the insert 25. In this manner the correct
adjustment of the air stream may be checked
easily at any time. If the air stream to the
pistol portion 1 is interrupted by the release
20 of the trigger the sucking action in the insert
25 ceases. The rod 34 drops onto its seat 33
and the valve body 36 falls back onto its seat
35. The valve body 36 closing the passage in
the tube 31 thus prevents the spraying material
25 already situated above the valve body 36 in
the rising tube 32 from flowing back. There-
by it is attained that when the spraying is
started again the feed of spraying material
from the additional container 23 starts im-
30 mediately so that a constant composition of
the mist of air and spraying material pro-
duced in front of the nozzles 4, 19 is guaran-
teed at any moment of the spraying.

The proportion of the mixture of the two
35 mixed spraying materials depends to a large
degree on the level of the additional nozzle
19 with respect to the compressed air stream
and on the distance separating the nozzle 19
from the pistol nozzle 4. The described possi-
40 bilities of adjustment of the nozzle body 17,
of the nozzle carrier 12 and of the clamping
sleeve 11 permit a fine variation of the pro-
portion of mixture of the two spraying materi-
als. Thereby it is also possible to remove the
45 additional container 23 from its cup 22 with-
out changing the adjustment of the additional
nozzle 19. Also tilting away of the additional
nozzle 19 from nozzle 4 by releasing the
screw 10 and tilting the clamping sleeve 11
50 carrying the nozzle carrier 12 and the nozzle
body 17 does not modify the relative adjust-
ment of the nozzle body 17 and the nozzle
carrier 12 so that upon tilting back the clamp-
ing sleeve 11 and fixation of the latter in the
55 starting position the additional nozzle 19 will
again take the correct position with respect to
the pistol nozzle 4. Likewise the manipula-
tions at the insert 25 of the additional con-
tainer as they are necessitated for example
60 when the additional container is refilled do
not modify the adjustment of the additional
nozzle 19. In addition to its pivotal arrange-
ment about the vertical axis of the carrier bolt
9 the additional nozzle 19 may also be
65 arranged to be pivotable, together with the
nozzle body 17 and the nozzle carrier 12,
also about the horizontal axis of guiding bolt
13. For this purpose either the groove 14 in
the guiding bolt 13 may be omitted or the

the clamping sleeve 11.

WHAT WE CLAIM IS:—

1. An improvement in or a modification of
a spraying apparatus for atomizing, mixing
70 and applying at least two spraying substances,
comprising a container for spraying matter, a
feeding duct for compressed air, an adjusting
device for controlling the feed of compressed
air, a nozzle for atomizing the spraying matter
75 contained in said container and entrained by
the current of compressed air, and at least
one additional container for spraying matter
exchangeably connected with the pistol, as
claimed in claim 1 of the parent specification
80 No. 750,940, wherein the additional nozzle
is arranged on a nozzle body, said nozzle body
being mounted on a nozzle carrier and capable
of adjustment in the direction of the nozzle
axis, said nozzle carrier being mounted on a
85 guiding bolt and capable of adjustment in a
direction perpendicular to the nozzle axis, said
guiding bolt being mounted on a carrying
bolt by means of a clamping sleeve so that the
said guiding bolt is capable of adjustment in
90 a direction parallel to the nozzle axis and also
capable of rotation about the carrying bolt,
said carrying bolt being attached at one end
to a portion of the pistol and secured at the
other end in a sleeve by means of a setting
95 screw, said sleeve having fixed to it a cup
which supports the additional container, said
additional nozzle and said additional container
being interconnected by a flexible pipe.

2. A spraying apparatus as claimed in claim
1, in which the nozzle body is provided with
100 an outer thread and is adjustable in a threaded
boring of the nozzle carrier.

3. A spraying apparatus as claimed in claim
2, in which the nozzle carrier is adapted to
105 be secured against translatory movement by
means of a setting screw.

4. A spraying apparatus as claimed in claim
3, in which the nozzle carrier is prevented
110 rotation with respect to the guiding bolt 13 by
means of a longitudinal groove in the latter.

5. A spraying apparatus as claimed in claim
4, in which the guiding bolt projects away
perpendicularly from the clamping sleeve
serving as a carrier, said sleeve being arranged
115 on the carrying bolt so as to be axially slid-
able and rotatable with respect to this bolt
and adapted to be secured in any position to
the latter, the carrying bolt being secured by a
strap to a portion of the pistol carrying the
120 mouth piece thereof.

6. A spraying apparatus as claimed in claim
1, having an insert slipped from above into
the additional container, wherein this insert
comprises an outwardly projecting neck hav-
125 ing a connection piece for the flexible pipe,
said neck being prolonged by a tube project-
ing into the additional container and having
a check valve in its lower end portion.

7. A spraying apparatus as claimed in claim
6, in which the prolongation of the insert neck 130

- is double-walled in its upper portion, whereby the inner wall forming a rising tube projects over the connection piece into the neck of the insert and comprises a narrowed portion in which is formed a seat for an indicator rod loosely arranged in the rising tube and adapted to cooperate with its upper end with a marking provided at the neck of the insert for indicating the sucking action produced in the rising tube during operation of the pistol.
- 5 8. A spraying apparatus as claimed in claim 1, in which the additional container is arranged in the cup rotatable and axially displaceable with respect to the carrier bolt and to which it is secured by means of the sleeve so as to be adjustable in any desired position. 15
9. The improved and modified spraying apparatus of the mentioned type substantially as hereinbefore described and as illustrated in the accompanying drawings. 20
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Fig. 1

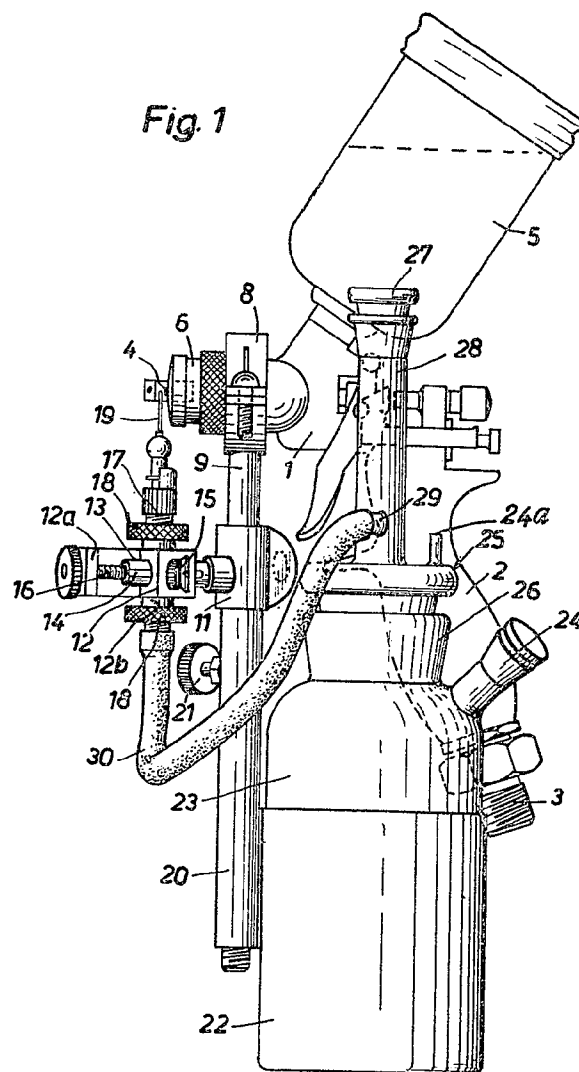


Fig. 3

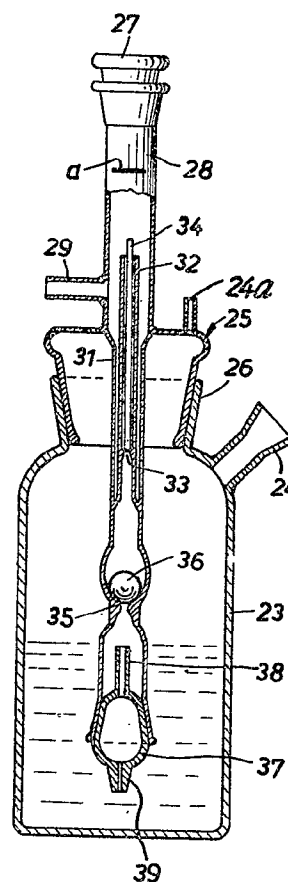


Fig. 2

